

NORTHERN LIGHTS

CPH BIKESHARE SYSTEM



CONCEPT

The most livable city in the world

The new bikeshare will be part of the greater vision of making Copenhagen the most liveable, workable, playable, enjoyable, visitable, sustainable and bikeshareable city in the world!

The new bike system must support Copenhagen as a green, clean, and well-connected city - that offers cosy, sustainable, and well-designed living.

The DNA of the bike system is Flexibility, Function, Integration with city - not to forget Quality of Riding and Stylish Looks. FIND A BIKE ANYWHERE AT ANYTIME, EASY ACCESS, EASY RETURN.

We have created a system with the user in mind, a system that the people who use using the city of Copenhagen, really would want to use. Current bikeshare systems around the globe all make flexibility trade-offs between locating and returning bikes.

We believe that clever integration of mobile and GPS navigation technology can break the trade-offs and create a transparent system for the user and for the system administrator. The Northern Lights Bikeshare System use mobile and GPS navigation technology to offer maximum flexibility for the user. We made a bikeshare system, that enables the user to locate a citybike anywhere and at anytime, with easy access and return of a bike.

A compact carrier bike

The bike is inspired by the traditional cargo bike used by grocery shops for home delivery in Copenhagen. The bike features a convenient and practical carrier device that can be folded in on the sides, and handlebars that is turned when the bike is not in use. The compact design of the bike makes it economical in its use of space when it is not in use.

Anywhere, anytime

The citybike can be returned and picked-up at any street corner in the cityzone. With a mobile phone the nearest citybike can be located anywhere in the city. The bikes are easily accessed with a swipe card, or by the use of a cell phone, and are easily returned at any street corner in the city.

Integrate with existing infrastructure

Metro stations act as hotspots. At a hotspot it is possible to find a city bike at anytime. For special events in the city temporary hotspots can quickly be set up via the digital system. If a hotspot is about to run dry the distribution system starts up.

At the hotspots bikes are placed along a line of light diodes in the ground. The bikes GPS technology detects when it is placed near the line.

The hotspots are very different from permanent and physical docks. They only take up space according to the amount of bikes present at the hotspot. The hotspots are easily set up and moved according to needs that arise with the development and accumulated learning in the system.

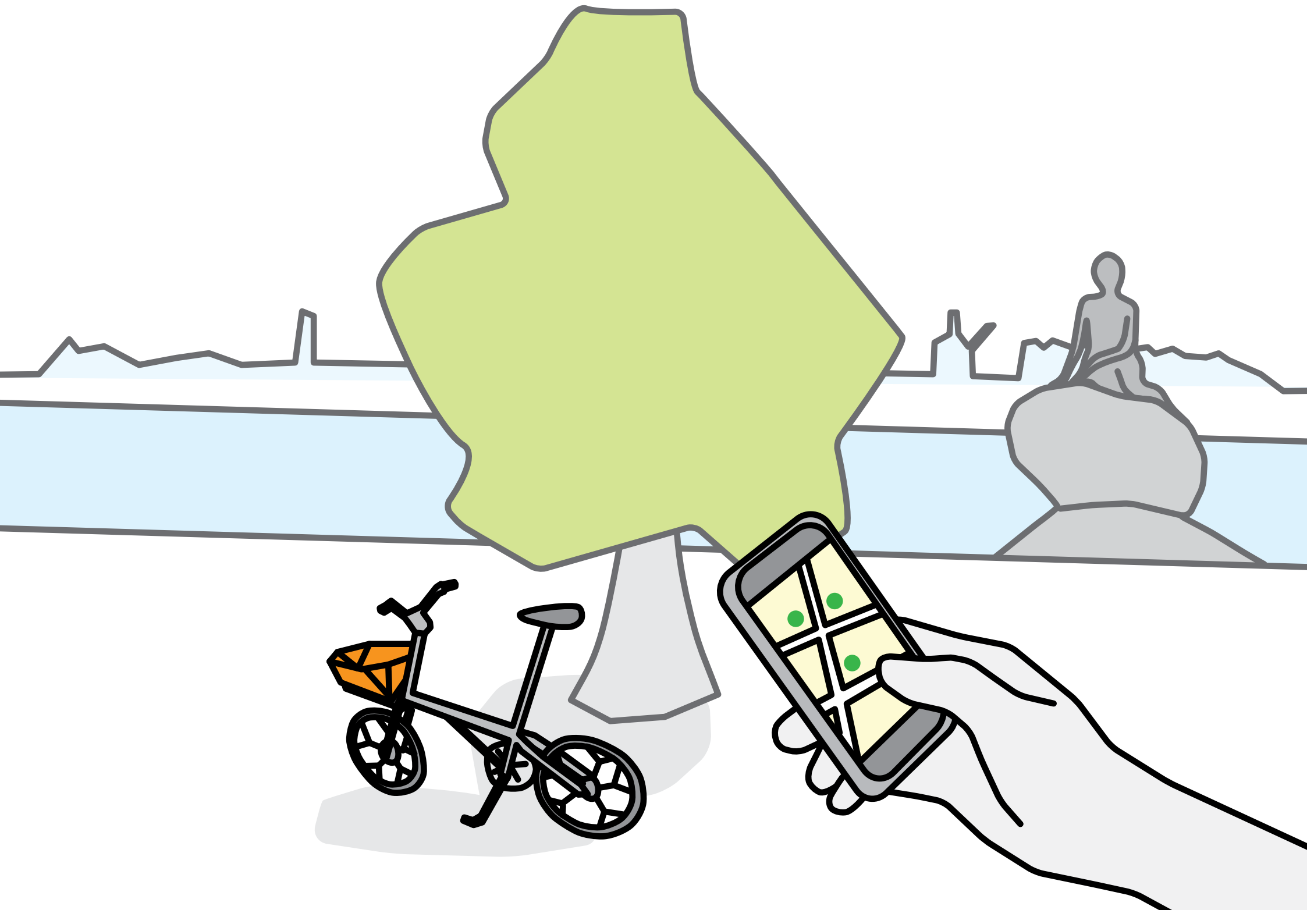
At winter these lines can be turned off if the bikes are taken off the streets.

User-driven distribution system

The digital interface makes the system transparent and enables Copenhageners to participate in the task of distributing bikes during the day.

The system shows hotspots that are about to run dry on the digital map which can be accessed from mobile phones.

Users are rewarded for bringing bikes to the dryspots. The distribution system minimizes the need for employed staff to take care of distributing bikes. The distribution system is flexible, green and low cost, while it involves and rewards the Copenhageners.h



THE BIKE



New meets old

The bike is inspired by the traditional cargo bike used by grocery shops for home delivery in Copenhagen. The bike features a convenient and practical carrier device that can be folded, and a steer that is turned when the bike is not in use. The compact design of the bike makes it economical in its use of space in the city.

Carrier

The carrier device can be used to carry bags, goods and the like. Instead of mounting the carrier on the steer it is mounted on the bike's frame for better handling and balance.

The carrier device is light and made of plastic that can be folded, this way the bike takes up less space when its not in use.

The carrier device is equipped with handles and can be detached from the bike, making a convenient shopping bag, or picnic basket.

Hook

A hook can be used to hang bags in, they will then stand in the carrier without content falling out.

Illumination

At night the carrier is illuminates by a line diode lamps placed in the steel base holding the carrier. The illuminated carrier makes the citybike highly visible in the dark, and adds to the significance of the bike.

Smaller Wheels

The wheels are smaller than a regular bike, a larger gear compensates for the smaller wheels.

Belt drive

Instead of a regular chain the bike is equipped with a belt drive. A belt drive requires virtually no maintenance and does not soil the user's clothing.

Lightweight

The small wheels, the belt drive, the plastic carrier decreases the weight of the bike.

Digital Intelligence

The citybikes are equipped with a chip reader, GPS and a radio unit that enables the bikes to talk with the digital system.

The bike's electronic device is located in the bikes steer, and is powered via induction when the wheels of the bike are spinning.

User Interface

Very simple - swipe card, feedback via LED/beeps.

A RFID-based card reader detects swiping of smart-cards, while an LED and a beeper provides clear and simple feedback.

Lock

The bike is locked by turning the steer 90 degrees. This way the bike takes up less space when its not in use.





INTEGRATION WITH THE CITY

Landmarks

The landmark of the bikesystem are bike repair workshops held in transparent containers located at the main train and metro stations. The landmarks signals transparency and responsibility reminding Copenhageners that the bikes break down and have to be repaired. The landmarks encourage careful and responsible use of the bikes.

At the landmarks trailers and safety helmets can be rented, and the carrier can be swapped for a child seat.

Hotspots

The system does not depend on docks. On the hotspots the bikes are visible, it is easy to drop them off and they take up as little space as possible.

The bike is designed to take up as little space as possible when it is not in use. The carrier can be folded and the steer is turned when not in use.

A line of light in the ground, shows user where to place the citybike, in order to receive refund, when they return the bike. This makes sure that the bikes are placed close to eachother.

Street corners

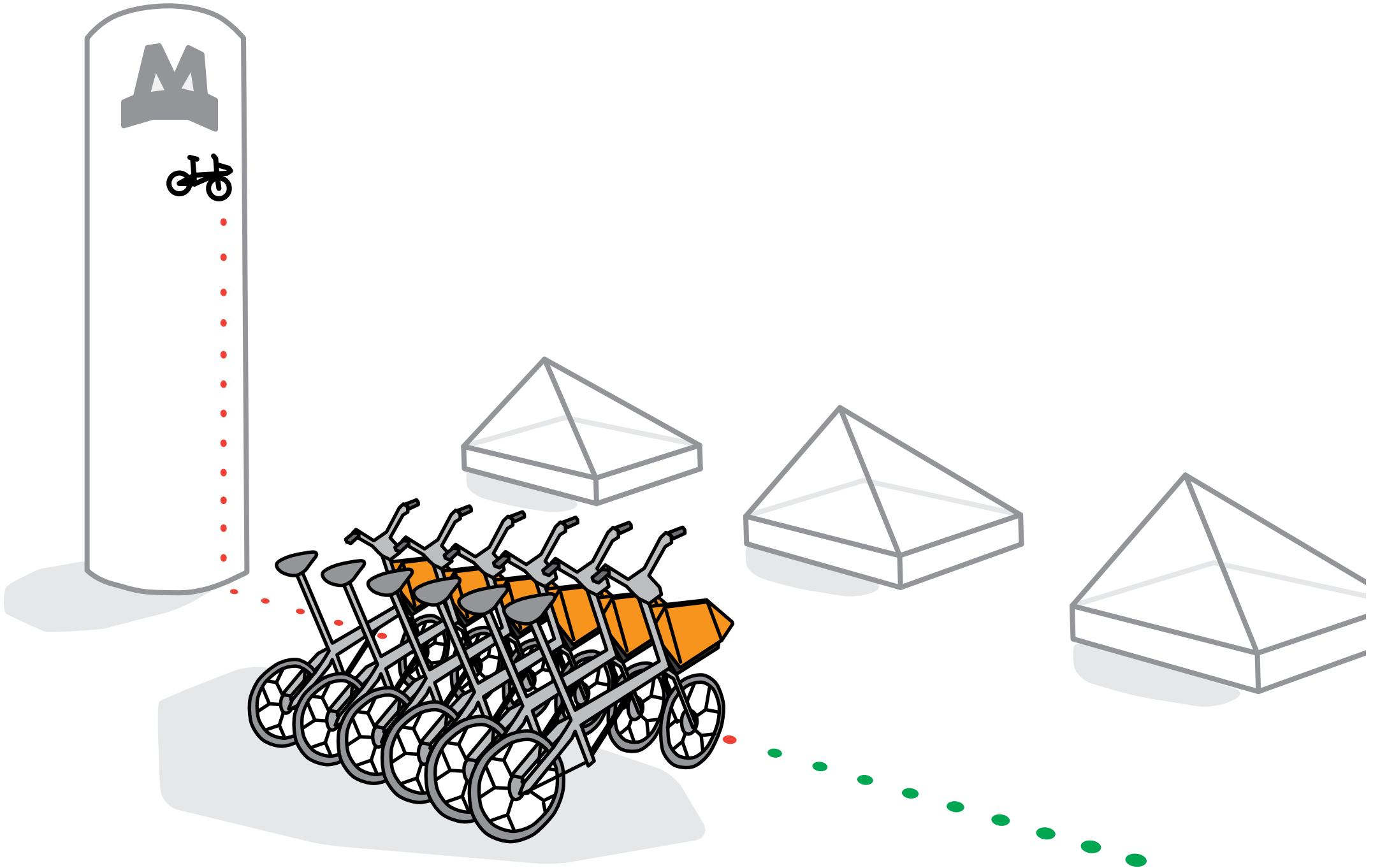
Bikes in the city zone are always left at a street corner for easy visibility. The characteristic carrier in strong colours makes the bike visible and recognizeable.

Illumination

In the night the carrier is lit up by small diode lamps in the steel plate underneath the carrier. The illuminated carrier makes the bike visible at night and recognizeable.

Detachable carrier

The carrier can be detached and can be used as a shopping bag. The easily recognizeable shopping bag makes the bike system present in many different places like supermarkets, stores and warehouses.



PAYMENT SYSTEM

Building on the deposit-refund idea

The system builds on the idea of a regular deposit-refund system. But adds a significant reward feature, to facilitate desired distribution of citybikes to dryspots (hotspots that are about to run out of citybikes).

The system does not compromise flexibility in relation to locating and returning bikes. A citybike can be returned at any streetcorner in the cityzone, at the same time a citybike can be located at a hotspot at anytime.

Encouraging balanced use

If a hotspot is about to run dry from bikes, it appears as a dryspot on the digital map.

An intelligent reward system encourages users to return bikes at dryspots, by offering the user an economic reward for returning citybikes at the dryspot.

The economic reward is balanced by journeys beginning in a hotspot and ending outside a hotspot.

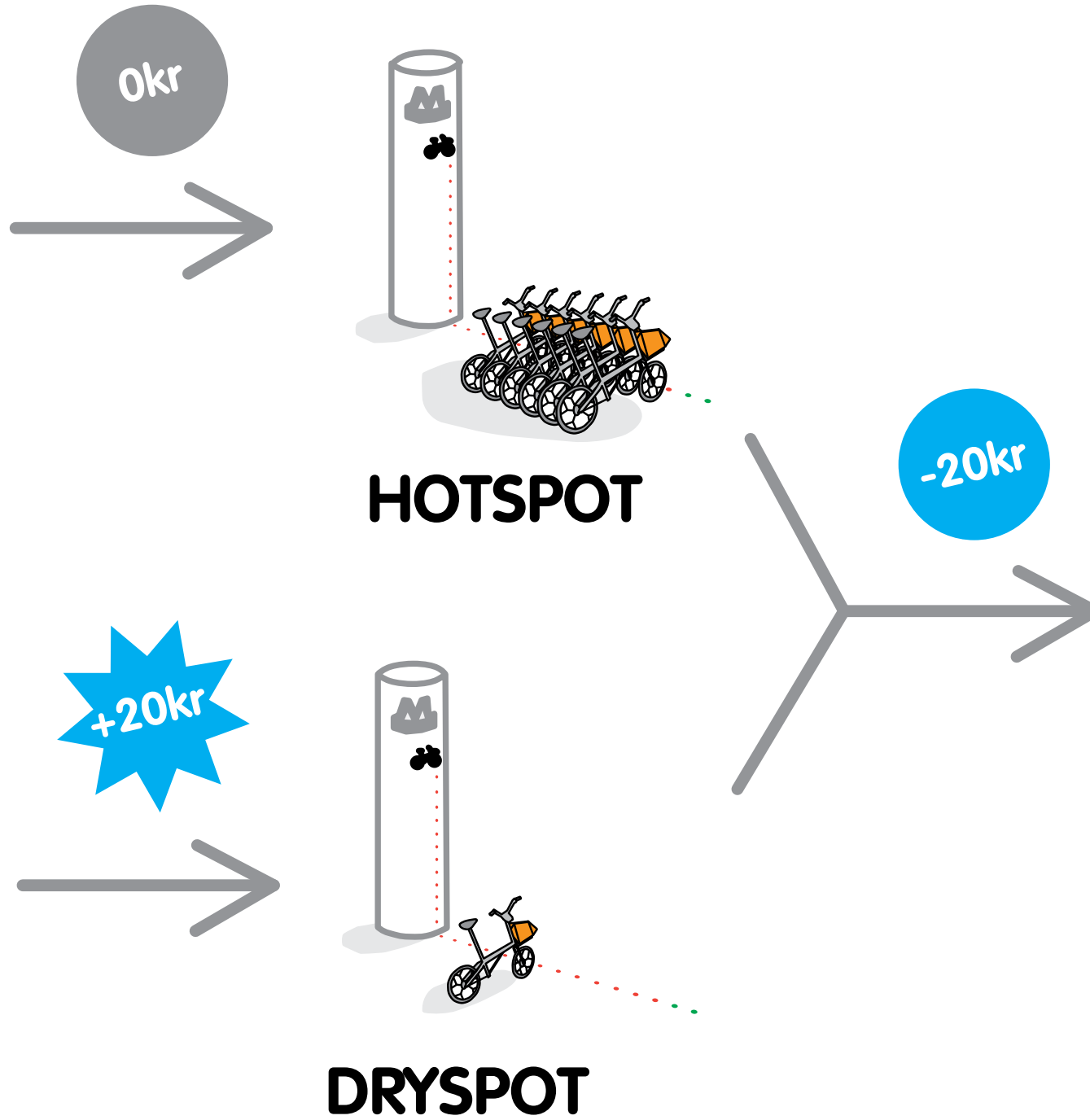
Paying

Payments and rewards are transferred to and from users' bank accounts or their phone bill depending on what kind of device they use to activate the citybike.

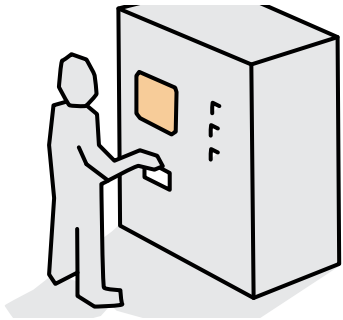
A journey beginning at a hotspot and ending outside a hotspot costs 20 dkr.

A journey beginning outside a hotspot and ending in a dry hotspot is rewarded with 20 dkr.

All other rides are free!

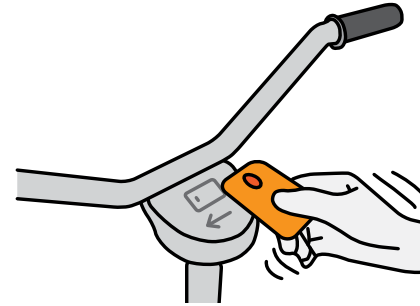


SYSTEM FEATURES



Purchase

Swipe cards can be purchased from a ticket machine at the station or from a parking machine on the street. The swipe card is connected to the user's credit card. The swipecard is the most convenient way of activating the bikes.



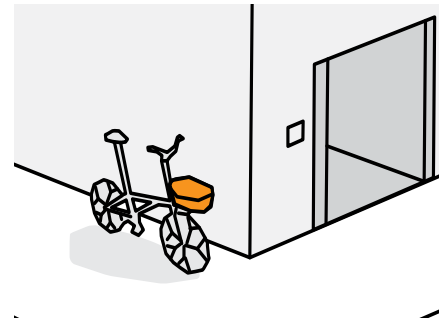
Activation

The citybike is easily activated with a swipe-card. The bike is connected to the user's identity until the user "swipes" the card over the chip reader again and returns the bike.



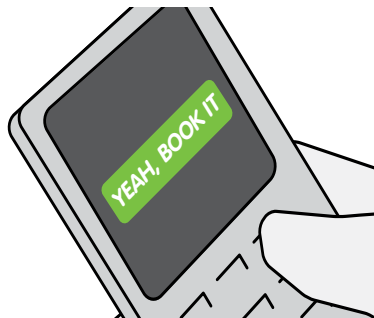
Locating

The nearest free bike can be located with a digital map on a smart phone.



Return

A citybike can be returned at any street corner within the inner city. This way bikes are visible to other users and are not placed in a i.e. backyard looking for a bike. The GPS technology detects where the bike is placed.



Booking

A located citybike can be booked for free up to 15 minutes, so that it is not gone when you get there.



Temporary Lock

If users want to enter a shop or visit an attraction, the bike can be locked and booked by turning the handlebars.

The first 15 minutes booking is free. After 45 minutes the user receives a text message asking for continued booking.



Low-tech

Some users don't have a smart phone, and some users don't have a swipe card when they want to use a bike. A citybike can be located, booked and returned by sending simple text-messages from a regular cell phone.

Locating

When a user sends a text-message with a street address, the user receives a message with turn-by-turn instructions to the nearest bike.

Booking

If the user replies "B" the bike is booked for 15 minutes.

Activation

When the user is in front of the booked bike, the bike can be activated by replying "A".

RETURN

The bike is returned by replying "R"

TAKE A TOUR WITH THE HAPPY USERS

Anders from Århus - the commuter

Anders, an architect from Aarhus, is going to Copenhagen for a work meeting with business partners. After the meeting Anders plans to look for a new pair of shoes, in the small shops of the inner city.

When Anders arrives in Copenhagen at Nørreport he takes out his swipe card, and unlocks a bike. At the hotspot Anders knows that there are always available citybikes.

Anders places his bag in the carrier and wheels off into the traffic. At the office of his business partners he returns the bike, with his swipecard.

After the meeting Anders goes shopping by foot in the inner city. Several shops and a visit at a coffee shop later, he wants to head back to Nørreport to catch his train.

He takes out his smart phone, locates a bike on the digital map and books it. He finds the bike and returns to Nørreport, where he leaves the bike and catches his train.





Emma and Petter from Malmö - the tourists

Emma and Petter, a young couple from Malmö, planned to spend a day on city bikes to visit different sights and attractions around the inner city of Copenhagen.

They arrive at Copenhagen central station, where they use their credit card to purchase a swipe card. They walk to the inner city and locate two bikes with the swipe card and head off towards the first stop on their route, The National Gallery of Denmark. They lock the bikes with the bikes' temporary locks and spend an hour inside the gallery.

After the gallery visit Emma and Petter are hungry and decide to bring their lunch to one of the parks in the city. After locking the bikes in front of the park, they detach one of the carriers which is holding their lunch and drinks, and use it as a picnic bag.

By the end of the day, they are going to return the bikes. On the digital map Emma sees that Nørreport is a dryspot. This means that they will receive 20 dkr for each of their bikes, if they return their bikes at Nørreport instead of the central station.

This is no problem because their train back to Malmö leaves from Nørreport as well. Emma and Petter is rewarded with 20 dkr for each of their bikes.



Sofie - the copenhagenener

Sofie works in the center of Copenhagen. She normally walks to her job in a clothing store. In her lunch break Sofie decides to pick up a surprise present from a store on the other side of the city for her boyfriend.

Sofie doesn't have a smart phone and she doesn't have Swipe card either. Instead she uses her regular cell phone. She locates a bike and books it, with text messages, and receives turn-by-turn directions to the booked bike. When Sofie is in front of her booked bike, she uses her mobilephone to unlock the bike, by sending another text message.

When Sofie reaches the store on the other side of town she uses the temporary lock, and detaches the carrier and use it for her shopping.

After her shopping she unlocks the bike in the same way as before with a text message, heads back to her job, and returns the bike by sending another text message.

Sofies journey is free because she picked it up in the cityzone.

